CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET – MS 15
SACRAMENTO, CA 95814-5512

February 28, 2003

TO: Robert Pernell, Commissioner and Committee Presiding Member
Arthur H. Rosenfeld, Commissioner and Committee Associate Member
Garret Shean, Hearing Officer

SUBJECT: COSUMNES POWER PLANT PROJECT (01-AFC-19) - FINAL STAFF ASSESSMENT PART 2

On February 11, 2003, California Energy Commission staff filed the Final Staff Assessment Part 1 (FSA Part 1) for the Cosumnes Power Plant project (CPP), proposed by the Sacramento Municipal Utility District (SMUD). The FSA Part 1 included all subject areas except for Alternatives, Biological Resources, and Water and Soil Resources. The following is staff's final assessment of water and soil resources impacts resulting from the construction and operation of the CPP project and of the project's conformity with applicable water and soil resources laws, ordinances, regulations, and standards. Following staff's Water and Soil Resources assessment are the declarations and resumes for the staff that prepared the assessment. Please insert the enclosed section, declarations, and resumes into the February 11th portion of the FSA, as appropriate.

Staff's Biological Resources and Alternatives final assessments will be filed (FSA Part 3) within three weeks following receipt of the following items:

- A complete Biological Assessment (BA) that contains measures to mitigate for all of the impacts to federally-listed species and their habitat, that has been accepted by the U.S. Fish and Wildlife Service and National Marine Fisheries Service as complete.
- A revised draft Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) that incorporates all of the updated mitigation measures in the accepted BA and State protected species.

Previously noticed Evidentiary Hearings regarding Water Quality and Soils are scheduled for Thursday, March 13, 2003. It is staff's understanding that the Committee may schedule additional hearings on the subject of Water and Soil Resources, if deemed necessary.

The following analysis pertains to Phase 1 of a two-phase CPP project (please see FSA Part 1, **Project Description** section for additional information regarding CPP Phase 1 and CPP Phase 2) and concludes that with the implementation of the proposed conditions of certification, the project would comply with all applicable laws, ordinances, regulations, and standards and that all erosion, sedimentation, and water supply

impacts would be mitigated to a less than significant level. Specifically, staff found that the project would not result in a demonstrable reduction in regional water supplies or a significant impact on regional water supplies. Staff also found that use of reclaimed water is technically and economically feasible. However, staff believes that the timing and availability of tertiary-treated reclaimed water for the start of operation of Phase 1 in 2005 is uncertain. Staff considered SMUD's status as a municipal utility and its mandate to provide reliable power to its customers and has concluded that the use of reclaimed water for Phase 1 by 2005 is infeasible. SMUD has agreed to use reclaimed water for power plant cooling for Phase 2.

Sincerely,

-signed original-

PAUL RICHINS, Jr.
Energy Facilities Licensing Program Manager

Enclosures: Final Staff Assessment (Part 2)
Staff Declarations and Resumes

cc: POS

WATER AND SOIL RESOURCES

Testimony of
Phil Lowe, P.E., Richard McCann, Ph.D, and Richard Anderson

INTRODUCTION

This section analyzes the potential effects on water and soil resources by the Cosumnes Power Plant (CPP) proposed by the Sacramento Municipal Utility District (SMUD). The analysis specifically focuses on:

- whether construction or operation would lead to accelerated wind or water erosion and sedimentation;
- whether the project would exacerbate flood conditions in the vicinity of the project;
- whether the project's demand for water would adversely affect surface or groundwater supplies;
- whether project construction or operation would lead to degradation of surface or groundwater quality; and
- whether the project would comply with all applicable laws, ordinances, regulations and standards (LORS).

This analysis pertains to CPP Phase 1. Where the potential for impacts is identified, staff has proposed mitigation measures to reduce the significance of the impacts and, as appropriate, has recommended conditions of certification for Phase 1.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

FEDERAL

Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. Section 1251 et seq.) was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). In California, NPDES permitting authority is delegated to, and administered by, the nine Regional Water Quality Control Boards (RWQCB).

Section 401 of the CWA requires that any activity, including river or stream crossings during road, pipeline or transmission line construction, that may result in a discharge into a State water body must be certified by the RWQCB. This certification ensures that the proposed activity does not violate State and federal water quality standards.

Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (ACOE) to regulate the discharge of dredged or fill material to the waters of the U.S. and adjacent

wetlands. The ACOE issues individual site-specific or general (Nationwide) permits for such discharges.

Reclamation Projects Authorization and Adjustment Act

The Reclamation Projects Authorization and Adjustment Act of 1992 (106 Stats.§§ 4593-4599) includes the Central Valley Project Improvement Act (CVPIA). The CVPIA amends previous authorizations of the Central Valley Project (CVP) to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation water supply, domestic water supply, and power generation uses.

STATE LAWS

California Constitution, Article X, Section 2

This section requires that the water resources of the State be put to beneficial use to the fullest extent possible and states that waste, unreasonable use, or unreasonable method of use of water is prohibited.

Water Code Section 13146

Water Code section 13146 states that State offices, departments, and boards, in carrying out activities which affect **water** quality, shall comply with State policy for **water** quality control unless otherwise directed or authorized by statute.

Porter-Cologne Water Quality Control Act (Water Code § 13000 et seq.)

The Porter-Cologne Water Quality Control Act of 1967, requires the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCB) adopt water quality criteria to protect State waters. Those criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. Water quality criteria for the project area are contained in the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins. This plan sets numerical and/or narrative water quality standards controlling the discharge of wastes to the State's waters and land. Those standards are applied to the proposed project through the Waste Discharge Requirements (WDRs) permit issued by the Central Valley Regional Water Quality Control Board (CVRWQCB).

Streambed Alteration Agreement

Section 1601 of the California Fish and Game Code requires an agreement between the Department of Fish and Game and a public agency proposing to substantially divert or obstruct the natural flow or effect changes to the bed, channel, or bank of any river, stream, or lake. The agreement is designed to protect the fish and wildlife values of a river, lake, or stream.

California Health and Safety Code

The Safe Drinking Water and Toxic Enforcement Act of 1986, Health and Safety Code section 25249.5 et seq., prohibits the discharge or release of chemicals known to cause cancer or reproductive toxicity into drinking water sources.

STATE POLICIES

State Water Resources Control Board Resolution 75-58

The SWRCB has adopted policies that provide guidelines for water quality protection. The SWRCB has specifically addressed the siting of energy facilities in its Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling (adopted by the Board on June 19, 1975, as Resolution 75-58). This policy states that where the Board has jurisdiction, use of fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. In addition, it states that power plant cooling water should come from (in order of priority): wastewater being discharged to the ocean, ocean water, brackish water from natural sources or irrigation return flow, inland waste waters of low total dissolved solids, and other inland waters. This policy also includes cooling water discharge prohibitions, including a prohibition on land application.

State Water Resources Control Board Resolution 77-1

SWRCB Resolution 77-1 encourages and promotes reclaimed water use for non-potable purposes.

State Water Resources Control Board Resolution 68-16

The SWRCB has adopted a policy for maintaining existing high quality waters to the maximum extent possible. This policy states that existing high water quality must be maintained until demonstrated to the State that any proposed change is consistent with the maximum benefit to the people of the State and will not unreasonably affect present or future beneficial uses. Any activity which discharges a waste to existing high quality waters is required to provide the best practicable treatment necessary to assure that pollution or nuisance does not occur and that the highest water quality, consistent with maximum benefit to the people of the State, is maintained.

LOCAL

Sacramento County Land Grading and Erosion Control Ordinance

The purpose of the Sacramento County Land Grading and Erosion Control Ordinance (SCC-1002) is to minimize damage to surrounding properties and public rights-of-way; degradation of water quality; disruption of natural drainage flows; sediment and pollutant runoff from construction related activities; and to comply with the provisions of the County's NPDES Permit Number, CA0082597.

The County of Sacramento reviews grading plans on projects which would 1) grade, fill, excavate, store or dispose of 350 cubic yards or more of soil or earthly material or 2) clear and grub one acre or greater of land within the unincorporated area of the county. The ordinance requires grading plans prepared by a civil engineer be submitted for County review and approval showing the location of grading and disposal areas in relation to on-site and surrounding watercourses and wetlands, existing and proposed drainage systems, and drainage area boundaries and acreages.

Sacramento County Floodplain Management and Interim Floodplain Development Policies

The Sacramento County Floodplain Management and Interim Floodplain Development Policies establish requirements and guidelines for 1) minimizing and mitigating impacts of new development on floodplains in unincorporated Sacramento County and 2) guiding new development in or near floodplains. Those policies require new development to be located above the elevation of the 100-year floodplain, and establish guidelines and restrictions for floodplain development, encroachment, and fill. The policies are administered by the County of Sacramento Public Works Agency, which also administers the Federal Emergency Management Agency Flood Insurance Program for the unincorporated portion of Sacramento County.

ENVIRONMENTAL SETTING

The proposed CPP facility is proposed to be constructed in two phases: CPP Phase 1 and Phase 2. Each phase would consist of a nominal 500-megawatt (MW) combined-cycle generating facility using natural gas-fired combustion turbines. In the AFC, SMUD proposed to use water from the Folsom South Canal (FSC) for all water uses (SMUD 2002a). More recently, SMUD agreed to use reclaimed water for Phase 2 per a February 7, 2003, agreement between staff and SMUD (see **Water and Soil Resources Exhibit 1**). Additional CPP facilities consist of:

- approximately 26 miles of natural gas pipeline between the CPP and SMUD's existing pipeline at the Carson Ice-Gen Plant. See **Project Description Figures 4 and 5** for the preferred pipeline alignment;
- a 230-kilovolt (kV) switchyard;
- approximately 0.4-mile 230-kv transmission line from the new switchyard to the existing Rancho Seco Plant (RSP) switchyard;
- a new 0.4-mile pipeline connecting CPP to the existing 66-inch diameter underground water pipeline that currently serves the RSP. The water would come from the FSC;
- a package treatment plant to provide domestic water by treating surface water from the FSC pipeline;
- a 24-foot wide construction access road constructed east of the RSP;
- a zero-liquid discharge (ZLD) system designed to process plant cooling tower blow-down and wastewater;
- wet cooling towers with mechanical draft fans;
- a 20-acre construction laydown area to be located immediately south of the project site on the south side of Clay East Road;
- a detention basin to be located adjacent to Clay Creek at the northwest corner of the project site; and
- new drainage culverts under Clay East Road.

Phase 1 of the CPP proposes to use an annual average of 2,663 acre-ft of water per year (AFY) with a maximum demand rate of 2,499 gallons per minute (gpm) for peak summertime operation (SMUD 2002ae, p. 8-14-8). About 96 percent of this water would be used for power plant cooling.

SITE AND VICINITY DESCRIPTION

SMUD proposes to build the CPP in Sacramento County 25 miles southeast of the city of Sacramento. The CPP would be located on approximately 30 acres of a 2,480-acre area owned by SMUD on which the RSP is also located. Approximately 50 acres would be disturbed during construction activities. The site is located approximately four miles north of San Joaquin County and five miles west of Amador County.

Aside from the RSP located about a half mile to the north, the CPP site is in a rural area dominated by grazing, vineyards, and scattered rural homes. The Sierra Nevada foothills are located approximately 15 miles to the east. The project site slopes gently from south to north, but is otherwise flat. Site elevation ranges from 140 to 160 ft above mean sea level. According to the AFC, annual precipitation at the project site is about 12 inches per year. Normally, 89 percent of Sacramento Valley rainfall occurs between November and April. Daytime temperatures during summer months range from between 80°F and 100°F, with peak days reaching as high as 110°F. Sacramento temperatures range from an average minimum of 39.5 degrees in January to an average maximum of 91.4 degrees in July (SMUD 2001a).

SOILS

Soils on the project site are classified as Redding gravelly loam and Corning Complex. Redding gravelly loam is located on approximately 90 percent of the project site. Redding series soils are moderately deep, well or moderately well drained soils derived from alluvium from mixed sources. Water erosion potential is slight to moderate with a slow to medium runoff rate. Revegetation potential is fair. The soils occur on nearly level to gently sloping surfaces.

Corning soils are very deep, well or moderately well drained soils formed in gravelly alluvium from weathered mixed rock sources. Corning soils are on high terraces with mound and intermound microrelief. Water erosion hazard is moderate to severe, with a medium runoff rate. Revegetation potential is fair.

The proposed gas pipeline would cross a series of soils with slight to moderate water erosion hazard, slow to medium runoff rate, and fair to good revegetation potential. Table 8.9-2A of the AFC summarizes those soil characteristics (SMUD 2001a).

REGIONAL SURFACE WATER

The primary rivers in Sacramento County are the Sacramento, American, and Cosumnes rivers. The Sacramento River flows from north to south along the western boundary of Sacramento County before ultimately discharging into the San Francisco Bay-Delta. The American and Cosumnes rivers flow east to west from the Sierra Nevada Mountains. The American River is the larger of those two rivers and its flow is regulated by Folsom Reservoir located in northeastern Sacramento County. The Cosumnes River watershed is largely unregulated and in most years, the downstream

flows are intermittent with no flow occurring in the summer months. The proposed project site is within the Cosumnes River watershed. The FSC and Rancho Seco Reservoir are the major surface water features in the vicinity of the project site.

Cosumnes River

The Cosumnes River is the last large undammed river in the Central Valley, flowing at up to 54,000 cubic feet per second (cfs) during storm events. The Cosumnes River channel is natural, meandering, and bordered by riparian vegetation on both sides. USGS Water Resources data show that the Cosumnes River runs dry at McConnel Gage during the summer months, likely influenced by surface diversion and groundwater pumping.

The Cosumnes River flows into the Mokelumne River, which joins the Sacramento-San Joaquin Delta near Antioch. Beneficial uses of this river system include water supply; recreation; aesthetics; groundwater recharge; freshwater replenishment; and fish, wildlife, and aquatic habitat.

Clay Creek, Hadselville Creek, and Laguna Creek

Clay Creek, adjacent to the CPP site (see **Water and Soil Resources Figure 1**), is an ephemeral stream with a watershed area of approximately 4.6 square miles. The 100-year and 10-year peak discharges on Clay Creek are estimated to be 1,200 cfs and 590 cfs, respectively. Clay Creek flows from east to west, approximately 0.1 mile north of the project site and has been diverted and altered as a result of mining, Rancho Seco Reservoir, and construction of the RSP (SMUD 2001a). Because of mine tailings, the creek divides into two braids (branches) approximately 400 ft east of the project site. The north braid crosses from east to west approximately 400 ft north of the CPP site. The south braid crosses the northeast corner of the project site. Approximately 2.3 acres of the 30-acre CPP site are situated between the north and south braids of Clay Creek.

Perennial flow in Clay Creek originates west of the project site where wastewater from the RSP discharges into the creek at a rate of about 13 million gallons per day (MGD) or approximately 15,000 AFY. Clay Creek flows into Hadselville Creek approximately two miles west of the project site. Hadselville Creek flows into Laguna Creek which flows into the Cosumnes River approximately nine miles downstream of the Laguna Creek/Hadselville Creek confluence (SMUD 2001a).

Clay Creek Tributaries

Two tributaries of Clay Creek enter the creek in the vicinity of the project site. Those tributaries (referred to as the East and West tributaries) flow from south to north across Clay East Road. The East Tributary flows directly into the proposed project site (see **Water and Soil Resources Figure 1**). The West Tributary crosses Clay East Road approximately 350 ft west of the project site. One hundred-year discharges on the East and West Tributaries are 60 and 80 cfs, respectively (SMUD 2002av, p.4). A small drainage swale, hereby referred to as the Western Swale, crosses Clay East Road into the southwest corner of the property and continues to Clay Creek. There is no discharge estimate available for the Western Swale.

Folsom South Canal/ Rancho Seco Reservoir

The FSC is located approximately 3.5 miles west of the project site. The FSC is a 26.98-mile conveyance owned and operated by the U.S. Bureau of Reclamation (USBR) as part of its CVP. The canal operates at less than 1 percent of its hydraulic capacity and runs generally north to south from Lake Natoma on the American River in eastern Sacramento County and ends just south of the RSP. SMUD is currently the primary user of this facility and pumps water from the canal to the RSP and Rancho Seco Reservoir. SMUD has a USBR water service contract for the delivery of a maximum of 75,000 AFY. Of this water, 15,000 AFY is allocated for use at the RSP site. SMUD has indicated that the proposed use of additional FSC water for the CPP that is above 15,000 AFY may decrease as future RSP decommissioning and flushing requirements diminish.

Rancho Seco Reservoir is located approximately one mile east and upstream of the CPP site and is constructed on an unnamed tributary to Clay Creek. The majority of the water for the Rancho Seco Reservoir comes from the FSC and a minor amount comes from the small, 1.8 square mile watershed in which the site is located.

The surface area of Rancho Seco Reservoir is approximately 165-acres and is contained by an earthen dam which was constructed in 1972. Reservoir storage capacity is 2,850 acre-feet. Water is regularly discharged from the reservoir to maintain water quality for recreation and for riparian vegetation downstream of the dam (SMUD 2001a). Rancho Seco Reservoir was originally developed to provide an emergency backup water supply for the RSP and to provide water for fire control. SMUD agreed to operate Rancho Seco Reservoir as a public park through December 31, 2022 (SMUD 2002as, p. 6). The park is open year round to the public for swimming, fishing, and camping.

Regional Water Quality

East Bay Municipal Utility District (EBMUD) water quality data taken at five points along the canal show that FSC water quality degrades along the canal route. This study showed that canal total dissolved solids (TDS) and other water quality parameters change with variation in releases to the FSC from Lake Natoma; as occurred in two of the three years (1998 and 1999) studied by EBMUD. The changes most likely resulted from greater groundwater inflow during periods of low Lake Natoma releases.

The average FSC water quality parameters are shown in **Water and Soil Resources Table 1** as measured from the Nimbus Dam (Lake Natoma) and at SMUD's pump station on the FSC. Turbidity is the only parameter that consistently decreases during canal transit due to settling during the long retention time. **Water and Soil Resources Table 2** compares estimated quality of water sources with U.S. Environmental Protection Agency's (USEPA) drinking water standards.

Water and Soil Resources Table 1
Average Folsom South Canal Water Quality

Average Parameter (ppm)	Nimbus Dam	SMUD Pump Station
Turbidity (NTU)	2.8	0.7
TDS	44	47
Alkalinity	21	28
Hardness	19	25
Calcium	5.1	7.5
Sodium	2.1	2.8
Ammonia	0.013	0.024
Chlorophyll A	0.0028	0.0049
Total Organic Carbon	1.5	3.1
Trihalomethanes	0.059	0.076

Source: EBMUD American River Water Quality Monitoring Program Summary, July 2 1977 to Feb 26, 2001.

Water and Soil Resources Table 2
Estimated Quality of Applicable Water Sources

Selected Average Parameter (ppm)	FSC/Rancho Seco Reservoir	Sacramento River	Regional Groundwater 3)	US EPA Drinking Water MCL	Estimated Reclaimed Water
TDS	100	110 (5)	200	500	450
Hardness	26 (4)	55 (4)	95	250	-
Turbidity (NTU) / Suspended Solids	0.7 (4)	27.3 (4)	-	0.5	10
Dissolved Silica	12	16 (2)	-	-	16
Iron	0.04	0.6 (2)	2	0.3	-
Manganese	<.01	0.5 (2)	0.3	0.05	-
Arsenic	<0.002		0.005 to 0.036	0.01	-
Radon, pCi/l	<0.001		100 to 779	300	-
Coliform (MPN/100ml)	69 (4)	359 (4)	-	200	<23
Total Organic Carbon (mg/l) (6)	3.1 (4)	3 (5)	-	-	N/A
Mercury, Total (ug/L)	2.13	7.7 (2)	-	2	-

(1) Operational Statistics Report,1999-2000, City of Sacramento.
(2) 1999-2000 Annual Monitoring Report of the Sacramento River Watershed Program.
(3) Regional Water Master Plan, American River Basin Cooperating Agencies.
(4) Rancho Seco Pump Station, EBMUD American River Water Quality Monitoring Program.
(5) Sacramento River ambient average, at Freeport & RM44, Sacramento Regional County Sanitation District.
(6) Total Organic Carbon in excess of 3 mg/L is generally indicative of a poor potable water source. Total Organic Carbon increase as the water transits the FSC.

GROUNDWATER

Regional Groundwater

The site is found in the Pliocene Laguna Formation and is underlain by 1,500 to 2,000 feet (ft) of Tertiary or older sediments which were deposited on a basement complex of

granitic to metamorphic rocks. Groundwater in the area is present under free or semi-confined conditions as a part of the Sacramento Valley groundwater basin which stores water primarily in the Mehrten Formation. The sand and gravel zones of this formation are heavily used in Sacramento County to provide 58 to 60 percent of the regional water supply. There is also a deep groundwater aquifer at a depth of 800 to 1,000 ft in the Mehrten formation which is separated from the shallow aquifer by a discontinuous clay layer. The water quality in the deep aquifer is generally not as good as that of the shallow aquifer because it contains higher concentrations of TDS, iron, arsenic, radon, and manganese (SMUD 2001a).

Extensive regional groundwater use has resulted in three persistent regional groundwater depressions, with groundwater levels decreasing at an average rate of about 0.5 foot per year. The depressions were 40 to 70 ft deep in 1990 and are projected to increase up to 220 ft by 2030 under various groundwater use scenarios (Sacramento County Water Agency 1997). Declines in groundwater level greater than 80 ft contribute to the deterioration of groundwater quality due to the up-rising of deeper, poorer quality groundwater. Northern Sacramento has the most significant depression. Overdrafts have been shown to generally increase arsenic and radon levels and hence a significant number of area wells exceed the USEPA's arsenic Maximum Contamination Level (MCL) of 0.010 milligrams per liter (mg/L) and/or the radon guideline of 300 Pico-curies per liter (pCi/L). Increasing dependence on groundwater in the region will exacerbate this problem.

Site Groundwater

The groundwater level and quality at the CPP site are relatively stable and have been largely unaffected by overdrafts in other Sacramento County areas (Sacramento County Water Agency 1997). Groundwater quality is generally good and within federal and State limits for drinking water. Water is sodium bicarbonate type with low total dissolved solids (<200 mg/L)), hardness less than 50 mg/L and iron and manganese less than 0.3 mg/L. There are no reports of contamination or other water quality problems at the site.

Groundwater contamination is unlikely because of a lack of urbanization east of the site (up gradient) and poor soil permeability that effectively prevents substantial migration of contaminants. Groundwater use is not proposed for CPP construction or any other use.

PROJECT WATER SOURCES

Cooling Water Source

Cooling water make-up is proposed to be supplied from the FSC via the Rancho Seco Pump Station with short-term storage provided by Rancho Seco Reservoir. FSC water, which is of high quality, is obtained from Lake Natoma on the American River. The Rancho Seco Pump Station withdraws 27 to 30 cfs year-around from the FSC. CPP Phase 1 would use an annual average of 2,663 AFY or 1,651 gpm. During periods of hot weather the plant would use a maximum of 2,499 gpm (104°F with inlet fogging) as identified in **Water and Soil Resources Table 3**. SMUD has agreed to use reclaimed water for CPP Phase 2.

Alternative Water Supply

In AFC Supplement C, SMUD states that two sources of reclaimed water to supplement Phase 2 of the CPP were also considered, and that it has held preliminary discussions with representatives from the Sacramento Regional Wastewater Treatment Plant (SRWTP) and Galt Wastewater Treatment Plant (GWTP). SMUD's preferred reclaimed water alternative would involve GWTP (SMUD 2002ae, p.iii).

The City of Galt Wastewater Treatment Plant is located approximately 12 miles southwest of the CPP site. Galt currently produces 2.1 MGD of secondary effluent that will increase to approximately 3.0 MGD by 2008. The City of Galt is willing to provide its current and future supply of secondary treated wastewater to SMUD at potentially no cost (Gault, 2003). The City is currently preparing its NPDES renewal application, which may require tertiary filtration due to concerns over the City's current surface discharge of their secondary treated effluent during the winter. The City would be willing to negotiate a cost sharing arrangement with SMUD for additional treatment required for use at the CPP (Gault, 2003).

Phase 1 and Phase 2 of the CPP would each use ZLD and each consume about 2,664 AFY of water based on an average consumption of 2.5 MGD, with a peak consumption of 3.5 MGD. Staff assumed that permitting and construction of the pipeline from Galt could be completed by 2008, however, it is unclear when tertiary-treated water would be available as the City of Galt is in the early stages of NPDES permit renewal. At some time in the future, the City of Galt would have available about 3 MGD of treated wastewater. This would be sufficient to supply the CPP Phase 2 with its average water needs. FSC water or additional storage could be used to supplement GWTP effluent deliveries during peak need periods. Staff estimates that the cost of upgrades to produce 3 MGD of tertiary-treated water versus the current secondary treatment would have a capital cost ranging between $1.2 – $10 million, depending on the tertiary treatment system selected.

Staff estimates the total cost of the 12-mile, 18-inch high-density polyethylene pipeline and backup water supply pipeline would be $12.2 million. This cost estimate includes construction and installation ($6.1 million), engineering services, environmental mitigation, and contingencies ($4.3 million), and the backup and supplementary water supply ($1.8 million).

The total range of capital costs for using reclaimed water from GWTP would range from $13.4 million to $22.2 million.

Potable Water Source

An ultrafiltration process is proposed as the primary process to treat make-up water for the plant steam cycle as well as for potable water uses. Steam cycle make-up water would be further treated with two-pass reverse osmosis and mixed bed demineralizers. Potable water would be further clarified, filtered, and disinfected in a US Filter Water Boy© package treatment plant. Total potable water proposed for domestic use is estimated to be less than two AFY (SMUD 2001a).

Back-up Water Source

The CPP project would have two on-site storage tanks with the capacity to store five million gallons of water (15.35 acre-feet). This would supply water during short-term peak demand or a water supply interruption. Rancho Seco Reservoir contains 2,850 acre-feet of water and currently provides storage for RSP use. SMUD proposes to use Rancho Seco Reservoir as a backup water supply for CPP Phase 1 (SMUD 2001a). Reservoir drawdown would be about two inches in four days which SMUD does not consider disruptive. Additional short-term peaking and back-up supply could be provided by additional reservoir drawdown or by the drawdown of the FSC. The FSC drawdown curve should approximate that of the reservoir drawdown.

PROJECT RELATED IMPACTS

SOILS

Erosion Control and Stormwater Management

During construction of the CPP, approximately 50 acres of land would be cleared of vegetation, graded, and leveled. Removal of the vegetative cover by grading would increase the potential for wind and water erosion of the affected soils. This exposure may cause potential erosion and sediment runoff, resulting in adverse impacts to surface waters downstream of the project (SMUD 2001a).

CPP Site Erosion and Sedimentation

The proposed site is characterized by features prone to erosion. As the slope inclination increases, the intensity of erosion increases proportionately. Wind erosion of soils in a natural setting is expected to be slight due to the presence of a grass cover over the site. Removal of this vegetative cover by grading would increase the potential for wind erosion depending on wind velocity and soil moisture content. The susceptibility of the bare soils to water erosion ranges from slight to severe (SMUD 2002u).

As proposed, CPP construction would result in the diversion of the south braid of Clay Creek around the northeast corner of the project site and the diversion of the East Tributary to the east around the project site. Additionally, the proposed construction laydown area, which extends approximately 1,000 ft south of Clay East Road, would be graded and compacted to direct runoff to the East Tributary and the Western Swale. The Western Swale would continue to drain under Clay East Road at its present location near the southwest corner of the project site. The existing culvert will direct water under Clay East Road from the Western Swale through the plant switchyard area over a gravel swale into the stormwater detention basin (SMUD 2003d, p.2)

The diversion of Clay Creek and the East Tributary and the grading, compacting and recontouring of the laydown area would expose the East Tributary, the Western Swale and the rerouted stream channels to erosion. Potential impacts include:

- erosion damage to the CPP site and adjacent land during periods of runoff;
- increased turbidity of stream flows through transport of the eroded material;

- sediment deposition downstream of the site; and
- the formation of two new stream channels in areas that could be unstable when subject to concentrated water flow.

SMUD is required, under Section 402 of the Clean Water Act, to comply with the statewide NPDES permit for stormwater discharges associated with construction activity. Soil disturbed during construction is expected to result in short-term increases in water and wind erosion. SMUD must obtain a NPDES permit for construction activities prior to starting construction activities (Conditions of Certification **Water & Soil 1, 2, 3, 4, and 6**).

Clay Creek Diversion

The diversion to the South braid of Clay Creek would be accomplished by filling the project site to an elevation above the 100-year flood elevation of Clay Creek and by constructing a diversion channel to collect diverted flows and route them around the site to rejoin Clay Creek at a location north of the project site. The site fill would be subject to minimal erosion due to low flow velocities in Clay Creek. Those portions of the fill that would be subject to flood flows would be protected from erosion by revegetation or other appropriate means (see Conditions of Certification **Water & Soil 1, 2, and 3**).

East Tributary Diversion

The East Tributary to Clay Creek would be diverted to the east around the site by installing a culvert at an angle approximately 45 degrees to Clay East Road. This culvert would discharge into a new channel constructed from the culvert outfall to the existing creek bed (SMUD 2003d, p. 3). Adequate design and plans to contain erosion and sedimentation must be approved by the CPM prior to construction activities (Conditions of Certification **Water & Soil 1, 2, 3, and 6**).

Western Swale

The Western Swale enters the CPP site at its present location near the southwest corner of the site. The existing culvert will direct water under Clay East Road from the Western Swale through the plant switchyard area over a gravel swale into the stormwater detention basin. Adequate design and plans to contain erosion and sedimentation must be approved by the CPM prior to construction activities (Conditions of Certification **Water & Soil 1, 2 and 3**).

Construction Laydown Area

The proposed construction laydown area would extend approximately 1,000 ft south of Clay East Road and be of irregular shape to avoid impacting the Western Swale that currently crosses Clay East Road near the southwest corner of the project site. The East Tributary crosses the middle of the laydown area from south to north. The laydown area avoids this tributary by using a minimum buffer of 25 ft from the stream bank. Avoiding this tributary would split the laydown area into two irregular parcels of roughly triangular shapes. The majority of the laydown area is proposed to drain into the East Tributary. The western portion is proposed to drain to the west into the Western Swale and into the CPP switchyard drainage system to the proposed detention basin (SMUD 2003d, p.2). After construction, SMUD proposes to restore the laydown

area by removing temporary BMPs (such as silt fences) and revegetating the graded contours. The area would not be restored to its natural contours and because of grading and compaction it would have increased surface runoff (SMUD 2003a, p2 SMUD 2002s). A detailed grading plan to show how the proposed grading scheme would be accomplished must be approved prior to construction activities (see Conditions of Certification **Water & Soil 1, 2, 3, and 6**). With implementation of the above mentioned conditions of certification, no significant site erosion and sedimentation impacts associated with diversion of the existing streambeds and recontouring of swales are anticipated.

Project design and the Storm Water Pollution Prevention Plan (SWPPP) would include measures to stabilize cut and fill slopes and to control drainage and erosion. SMUD has provided a draft SWPPP that identifies potential temporary and permanent BMPs to prevent soil erosion and sediments from affecting surface water. Implementing BMPs identified in an approved SWPPP would result in erosion and sedimentation impacts at less than significant levels (see Conditions of Certification **Water & Soil 1, 2, and 3**).

CPP Linear Facilities Erosion and Sedimentation

Temporary disturbances related to construction of the gas and water pipelines are expected to occur but would be minimal and short-term. Construction would include installation of approximately 26 miles of gas pipeline and a 0.4-mile water line, as well as construction of a transmission line and access road.

Construction of the pipelines would require crossing rivers, creeks, irrigation canals, riparian areas, vernal pools, and other ditches. SMUD proposes to use horizontal directional drilling (HDD) for four of the crossings including the Cosumnes River, Badger Creek, and a small lake approximately 0.5 miles southeast of the Badger Creek crossing. HDD involves drilling from the ground surface adjacent to a stream or water body using a technique that guides the direction of the drill to pass under the stream and emerge on the ground surface on the opposite side without disturbing the streambed. Staging areas are required at the entry and exit points of the drill.

HDD is used to avoid disturbance of water courses and wet areas. There are however, potential water quality impacts associated with HDD. Those potential impacts include occasional unintended fracturing (frac-outs) of the ground above the drill resulting in a pathway through which drilling mud discharges onto the ground surface or streambed. Although not generally toxic, the drilling mud can cause turbidity impacts or coat streambed surfaces to the detriment of aquatic life. Frac-outs can sometimes be difficult to detect, particularly in streams with flowing water (see the **Biological Resources** section of the FSA for additional analysis and mitigation regarding frac-outs).

Stream crossings where HDD would not be used would be crossed by open trench. Potential construction-related impacts of an open trench crossing include:

1. increased sediment delivery to the stream flow through disturbance of the channel bed and banks during construction;

2. destabilization of the channel bed and banks resulting in long-term erosion; and

3. introduction of foreign contaminants through the use of heavy machinery in the streambed.

Additionally, trenching for pipeline installation and vehicular travel within the construction right-of-way would temporarily disturb soils and potentially increase wind and water erosion. However, appropriate erosion and fugitive dust control measures would be implemented during construction. SMUD has provided a draft SWPPP that identifies temporary and permanent BMPs to prevent soil erosion and sediments from affecting surface water. Other BMPs specific to trenched stream crossings include construction in the dry season, diversion of stream flows around the active excavation area through the use of coffer dams, installation of temporary culverted crossings for heavy equipment, and regular maintenance and inspection of heavy equipment used in the stream channel to minimize the introduction of foreign pollutants. Following construction, permanent BMPs would be implemented at laydown areas and along linear routes (see Conditions of Certification **Water & Soil 1, 2, 3, and 4**). As a result, no significant impacts are expected.

Scour Potential

Natural stream channels and banks are typically subject to scour of the bed and banks during flood flows. Bed scour is usually not visible because it occurs during a flood and ceases as the flood subsides. Bank erosion is more evident because the effects can be seen well after the flood. Pipelines buried below and adjacent to active stream channels can be uncovered and exposed by bank erosion or streambed scour. Exposure of the pipeline could result in pipeline rupture through the action of flowing water and debris, or through third party action after the exposure has occurred. Rupture of the gas pipeline could result in water contamination or fire hazard.

The potential for exposure of the pipeline by stream erosion and scour can be minimized by locating the pipeline below the expected 100-year depth of scour at stream crossings and extending this depth of burial a sufficient distance away from the streambed to avoid anticipated lateral erosion. See Condition of Certification **Water & Soil 11**.

SPILL PREVENTION

There would be a variety of chemicals stored and used during construction and operation of the CPP project. Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals would be stored in storage tanks, and other chemicals would be stored in returnable delivery containers. Chemical storage and chemical use areas would be designed to contain leaks and spills. Drains would collect spillage, tank overflows, effluent from maintenance operations, and liquid from area washdowns. Effluent from chemical use area drains would be collected and treated on-site. Hazardous wastes would be stored in appropriately segregated storage areas surrounded by berms to contain leaks and spills. Bermed areas would be sized to hold 150 percent of the contents of the largest single container and, if not covered, sized for the larger of 150 percent of the largest single container and a 25-year, 24-hour rainfall (SMUD 2001a). Those BMPs would safeguard groundwater and downstream surface water from impacts due to chemical spills on the CPP site. See Conditions of Certification **Water & Soil 1 and 3**. As a result, no significant impacts are expected.

Other Wastewater Streams

Wastewater streams from the project's combustion turbine generator evaporative coolers, HRSGs, water treatment system, chemical feed area drains, and contact stormwater drains would be routed to the zero liquid discharge (ZLD) system. Those wastewater streams are concentrated in the ZLD system, with the final product being a solid cake and condensate. The condensate would be returned to either the cooling towers or the demineralized water system for reuse. Therefore, no liquid process waste would be discharged off-site.

Periodic cleaning of the compressors and heat recovery steam generators would generate about 30,000 gal/yr. of chemical cleaning wastewater that may contain elevated metals and other toxic constituents. This wastewater would be contained on-site in a sump and analyzed. If shown to be toxic, the wastewater would be pumped out and transported off-site for disposal at a licensed facility (SMUD 2001a). Therefore, no water quality impacts are expected to result from process wastewater activities. For more discussion of off-site liquid and solid waste disposal, please refer to Condition of Certification **Water & Soil 7** or the **Waste Management** section of this document.

Septic wastewater would be managed via an on-site septic system and drain field designed and permitted according to Title 6 (Health and Sanitation) of the Sacramento County codes. Therefore, no water quality impacts are expected to result from drain field operation. Condition of Certification **Water & Soil 9** addresses the site septic system design.

STORMWATER RUNOFF

CPP Site Stormwater Control

SMUD performed a 100-year hydraulic analysis of Clay Creek adjacent to the project site which showed that approximately 15 percent of the CPP site (approximately 3.8 acres) is proposed to be within the 100-year floodplain. This flood-prone area roughly corresponds to the triangular area at the northeast corner of the site between the north and south braids of Clay Creek as show on Figure W&S-250a of Data Response 245 (SMUD 2002s).

SMUD proposes to fill the area located in the Clay Creek 100-year floodplain to an elevation above the encroached 100-year flood level in conformance with Sacramento County standards. Filling this area is intended to divert the south braid of Clay Creek around the property, remove the northeast corner of the site from the Clay Creek floodplain, and prevent 100-year flooding of the CPP site and facilities (SMUD 2002k). Because the site would be elevated above the 100-year water surface elevation (see Conditions of Certification **Water & Soil 5 and 6**), no significant impacts are expected.

Stormwater Detention Basin

As proposed, the majority of the CPP site would drain to a 1.5-acre stormwater detention basin to be located at the northwest corner of the site (see **Water and Soil Resources Figure 1**). Water in the basin would be contained by an earthen embankment approximately 600 ft long adjacent to Clay Creek. The proposed basin would be designed to contain the 100-year, 24-hour runoff from the CPP site and a

portion of the laydown area. The maximum 100-year ponding depth in the basin would be between six and seven ft. Since the basin pond would be above the natural ground elevation, there could be adverse flooding impacts to downstream property from a sudden failure of the embankment. For this reason, the basin would be designed to accommodate a 100-year discharge in an overflow spillway that would be armored by a reinforced concrete baffle structure to prevent erosion of the embankment during overtopping. The top of embankment would have three feet of freeboard above the 100-year water surface in the overflow spillway to provide a factor of safety against embankment failure through overtopping.

The detention basin is proposed to be drained by a 12-inch-diameter pipe which would be controlled (opened or closed) by a valve operated manually. The purpose of this valve is to stop flows so an inspection can be made to determine the quality of water in the detention basin prior to releasing the water into Clay Creek. The detention basin is intended to act as a management measure to provide water quality benefits (SMUD 2001a). Details of the operation protocol for the detention basin, information on inspection procedures, contaminant collection and disposal methods must be approved by the CPM prior to the start of construction activities. See Condition of Certification **Water & Soil 10**.

Both the detention basin outlet and overflow spillway discharge into Clay Creek. There is a potential for erosion from high flow velocities and turbulence at the discharge point. Erosion protection such as riprap or other appropriate measure would be installed in the bed and banks of Clay Creek at these locations (SMUD 2003d, p.3). See Conditions of Certification **Water & Soil 1, 2, 3, and 10**. If the Conditions of Certification are implemented, no significant impacts are expected.

Diversion of Tributaries

SMUD proposes to divert the East Tributary around the CPP site by:

- grading a swale approximately 250 ft in length to direct the East Tributary discharge point at Clay East Road to the east side of the CPP site; and
- installing four 42 by 29-inch reinforced concrete culverts underneath Clay East Road at an angle to convey flows to a point near the southeast CPP corner north of Clay East Road (SMUD 2003d, p.3 Drawings, No. 103S002, Sheet 6).

Western Swale flow discharged at the north side of Clay East Road would travel overland through the CPP switchyard to the detention basin (SMUD 2003d p.2). The flow would then travel overland to Clay Creek along an excavated earthen channel. The West Swale would enter the project site at the current low point in Clay East Road and travel through the CPP switchyard to the detention basin (SMUD 2003d, p.2). See Conditions of Certification **Water & Soil 1, 2, 3, and 6**. If the Conditions of Certification are implemented, no significant impacts are expected.

CPP Stormwater Pollutants

The CPP site and laydown area would contain chemicals used during construction and operation that could wash into Clay Creek and tributaries during rainfall events. The proposed stormwater pollutant control would consist of source control measures, one or

more oil/water separators to pretreat contact stormwater prior to being sent to the ZLD system, and the detention basin as described above.

Effluent and stormwater runoff from chemical use area drains would be collected and treated on-site. Hazardous waste storage areas would be surrounded by berms to contain leaks and spills. Bermed areas would be sized to hold 150 percent of the contents of the largest single container and, if not covered, sized for the larger of 150 percent of the largest single container and a 25-year, 24-hour rainfall. Details of the contaminant collection and disposal methods must be approved by the CPM prior to the start of construction activities. See Conditions of Certification **Water & Soil 1, 3, 7, and 10**.

The construction laydown area would be covered with gravel to minimize sediment in the stormwater runoff. SMUD has proposed generic construction BMPs such as wattles, silt fences and straw bales that would be used to capture sediment and oils in the stormwater. Silt fences would be installed 25 ft or more from both sides of the East Tributary within the laydown area (SMUD 2003d, p.2). The construction laydown area would include storage parking areas for vehicles, equipment, a locked industrial container for hazardous materials used during construction, a concrete washout area, and equipment refueling and maintenance areas (SMUD, 2002s). The draft SWPPP proposes BMPs, including a hydrocarbon-absorbing geotextile base for the gravel ground cover (SMUD, 2002s). The SWPPP would include a spill-prevention and control plan for hazardous materials spills.

After reviewing SMUD's draft SWPPP and BMPs for the laydown area, the CVRWQCB sent a letter to staff (CVRWQCB 2003) stating that "oil is identified as a pollutant of concern in the laydown area. … Main sources of oil and grease are leakage from engines, spills at fueling stations, overfilled tanks, and waste oil disposal. The BMPs noted to address oils in stormwater are wattles and straw bales. … Silt fence and straw bale dikes are not Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) and are not an effective or appropriate BMP for oil and grease." Staff recommends that the concrete washout area, maintenance areas, and refueling areas be located in the western portion of the laydown area such that the runoff is directed into the detention basin as a water quality BMP. The detention basin outlet and bed layout should be modified to retain and treat "first flush" flows (approximately two acre feet) using such appropriate measures as filter strips, sand media filters, surface infiltration trenches, infiltration basins and vegetated swales as required by the Sacramento County Guidance Manual for On-Site Stormwater Control Measures. Staff further recommends that any BMPs proposed for the CPP site and laydown area be reviewed and commented on by the CVRWQCB prior to certification. See Condition of Certification **Water & Soil 1 and 10**. No significant impacts are expected, provided all Conditions of Certification are implemented.

CPP Linear Facilities Stormwater Control

The proposed project would include a 26-mile gas pipeline that would cross 37 water channels, irrigation canals, riparian areas, vernal pools, or ditches. There would be two crossings of the Cosumnes River (one under the main channel and one under the

overflow channel), one of Badger Creek, one of Laguna Creek, one of a tributary to Willow Creek, and one small lake. The rest of the wet area or stream crossings are ephemeral streams, seasonal wetlands, or ditches.

A new water line is proposed to convey cooling water from the RSP to the CPP. This water line would cross Clay Creek adjacent to the CPP site. Since the water line and gas line would be buried, no long-term stormwater related impacts are expected. Minor construction-related stormwater impacts are possible for those crossings that would be installed by open trench. The impacts could result from diversions of flows during the crossings or by temporary stockpiles of excavated material. Those impacts would likely be minor and can be avoided by construction in the dry season. See Conditions of Certification **Water & Soil 1 - 4**.

Other linear facilities include transmission lines and a construction access road. The proposed construction access road would begin at the existing access road to the Rancho Seco Reservoir and run due south to connect with Clay East Road at a point approximately one half-mile east of the CPP site (see **Project Description Figure 8**). The road would be 24 ft wide and constructed of asphaltic concrete on a raised gravel base. Culverts are proposed to convey water from the three local ephemeral drainages (SMUD 2002p, Section 1.2).

The proposed transmission line would cross Clay Creek north of the plant site, but the towers would be constructed on either side of the creek resulting in no anticipated stormwater related impact. With the use of appropriate BMPs, as set forth in an approved SWPPP, storm water related impacts of the proposed linear facilities are expected to be less than significant. See Conditions of Certification **Water & Soil 1 and 3**.

GROUNDWATER

No groundwater is proposed for use for the CPP project. Groundwater quality at the site is generally good and within federal and State limits for drinking water. There are no reports of contamination or other water quality problems at the site. Groundwater contamination is unlikely because of poor soil permeability effectively preventing substantial migration of contaminants. There would be no subsurface discharge from the project and there would be secondary containment of any spilled materials. Therefore, there is little potential for the CPP to cause or contribute to groundwater resources impacts.

PROJECT WATER SUPPLY

For Phase 1, SMUD proposes to use 2,663 AFY (1,651 gpm) of FSC water with a maximum demand rate of 2,499 gpm (for peak summertime operation). About 96 percent of the total water requirement is for cooling water. Non-cooling water is used for potable water, safety showers, washdown water, gas turbine inlet evaporative cooling, and for steam cycle make-up.

Water and Soil Resources Table 3 summarizes the proposed CPP Phase 1 water demand.

Water and Soil Resources Table 3
Estimated CPP Phase 1 Water Demand

Phase 1 Process	Average Flow	Maximum Flow
Non-Cooling Make-up	74(gpm)	183(gpm)
Cooling Make-up (gpm)	1,577(gpm)	2,316 (gpm)
Total Make-up Flow (gpm)	1,651(gpm)	2,499(gpm)
Total Yearly Make-up Required (AFY)	2,663(AFY)	

(SMUD 2002ae, p. 8.14 8)

FSC water is currently provided to SMUD under the terms of a 1970 USBR water supply contract for the delivery of up to 60,000 AFY of Central Valley Project (CVP) Water. An additional 15,000 AFY from a contract between the City of Sacramento and the USBR (USBR Contract No. 14-06-200-5198A) has been assigned to SMUD for use at Rancho Seco.

According to a USBR "will serve" letter dated November 26, 2001, the 1970 contract with SMUD will expire by its terms on December 31, 2012 (SMUD 2001a; and SMUD 2002v). Pursuant to Title XXXIV of Public Law 102-575, Central Valley Project Improvement Act (CVPIA), all long-term CVP contractors must renew their existing contracts prior to the original termination date following completion of the Programmatic Environmental Impact Statement (PEIS). The CVPIA amends previous authorizations of the Central Valley Project to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic uses. Additionally, the CVPIA recognizes fish and wildlife enhancement as having equal priority with power generation (USBR 2000a).

A draft renewal contract (dated August 6, 2001) between USBR and SMUD proposes to assign 30,000 AFY of SMUD's previous 60,000 AFY of CVP water allocation to Sacramento County Water Agency (SCWA) and would impose a unit cost of approximately $78/AF in 2003. This water re-assignment is due to increasing water demand and expected shortages in the Sacramento region.

Staff evaluated the CPP project to determine whether its proposed water supply would create significant direct impacts on water resources. The CEQA Guidelines state that a project may have a significant impact if it will "substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume" (CEQA Guidelines, App. G). The Guidelines also state that a project may have a significant impact if insufficient water supplies are available to serve the project. In past projects, staff's analyses of water supply issues has focused on whether or not a project would cause reductions in the availability of water needed to serve residential, commercial, agricultural, and industrial needs or that provides habitat for endangered species.

In this case, staff cannot predict a specific level of change in the availability of water for those uses (e.g., residential, commercial, agricultural, industrial or habitat) that would result from the project, and therefore did not identify a direct water supply impact. Although the project would use a substantial amount of water, the use would not result

in a demonstrable reduction in regional water supplies. Given that regional shortages are predicted in future years, staff also evaluated the project's incremental effect on regional water supply in conjunction with other water demands. This issue is addressed in greater detail under Cumulative Impacts.

BACK-UP WATER SUPPLY

In the case of a failure in the cooling water delivery system, SMUD proposes to use Rancho Seco Reservoir for backup water supply (SMUD 2001a). No significant impacts are expected as a result of the use of Rancho Seco Reservoir as a source for back-up water.

CONSTRUCTION WATER SUPPLY

During construction, approximately 3,000 gpd would be used for on-site dust control and an additional 3,000 gpd on the linear facilities. Water for on-site construction would come from SMUD's contracted FSC water delivered from a hydrant at the RSP. Water for construction on the linear facilities would be from the same source or contracted from Sacramento County at a location more proximate to construction (SMUD 2001a). No significant impacts are expected as a result of the use of construction water.

WASTEWATER

Wastewater from lavatory sinks, toilets, and showers would be disposed of in a package wastewater treatment system and leach field in the central portion of the site adjacent to the administration building (SMUD 2002aa). Facility equipment washdown drains would be directed to an oil/water separator where the oil would be collected and recycled and the water routed to the ZLD system for reuse in the cooling system (SMUD 2002ac, Figure 8.14-3aR). SMUD has proposed to install a separate ZLD system for each phase with the two systems interconnected for process redundancy. SMUD has not proposed a backup system for Phase 1 that would enable routine maintenance functions to be performed without interrupting power production. Staff assumes the plant would be shut down whenever the ZLD system is shut down. No significant water quality impacts are anticipated from those processes (see Condition of Certification **Water & Soil 7**).

ANALYSIS OF CUMULATIVE IMPACTS

Erosion Control and Stormwater Management

Construction and operation activities related to the proposed CPP may contribute to regional wind and water erosion. Implementation of the proposed mitigation measures would ensure that potential erosion and sedimentation is minimized. No significant cumulative impacts are anticipated.

Pollutant Spills

The proper use of secondary containment and the use of BMPs would reduce the risk of cumulative impacts from a pollutant spill to less than significant. No significant cumulative impacts are expected.

Stormwater Runoff and Flooding

Stormwater runoff typically increases with new construction activities. The proposed CPP would increase stormwater runoff at the point where CPP site runoff enters Clay Creek, but due to the site's relatively small size, the project would have a negligible effect on the stormwater flows of Clay Creek or downstream rivers. Further, the proposed detention basin would control site discharges up to the 100-year flood level so that flood flows would be at or below the natural discharge. The floodplain encroachment into Clay Creek would not affect existing structures or improvements nor would it affect adjacent property not owned by SMUD. No significant impacts are anticipated.

Surface Water Quality and Wastewater Discharge

There would be no surface or subsurface discharge of wastewater from the CPP. The CPP would not contribute to cumulative impacts in the area of water quality or wastewater discharge except through minor stormwater discharges that will be controlled to a less than significant level through the use of BMPs addressed in the SWPPPs and the proposed conditions of certification.

Statewide Water Supply and Demand

California is currently experiencing a statewide overdraft (using more than a sustainable amount) of fresh water. Groundwater is also being extracted from many aquifers at a rate greater than the aquifers are being recharged. Most of the State experiences average year and drought year water shortages (DWR 1998).

Cumulatively in California, fresh water supplies for consumptive uses are diminishing while the demand for high quality fresh water is increasing. CALFED and the CVPIA Programs have provided significant improvements in environmental protection of sensitive or endangered species and improvements in restoring aquatic habitat conditions in some reaches of streams and the Delta. However, this results in more water appropriated for environmental needs and less water available for consumptive needs. The outlook for the SWP is also limited. Assuming no changes in the rules by which the SWP operates, DWR estimates that during normal hydrologic conditions, its supply to contractors would average 70 – 75 percent of primary contractual allocations that cumulatively total about 4.3 million AFY at 100 percent, and during a critically dry year like 1977, will be severely limited to a mere 20 percent. Combined hydropower and water supply projects are realizing similar reallocations of resources during license renewals under the Federal Energy Regulatory Commission's (FERC) authority, accomplishing significant improvements for restoration of aquatic habitats and modifying project operations to better mimic natural stream flows for habitat restoration and recreation purposes, while resulting in less water in storage reserves for meeting future consumptive needs.

Every five years, DWR is required to prepare a statewide Water Plan addressing projected demands and supplies, and strategies to meet the State's future water needs. In the last completed Water Plan Update -1998, DWR determined that as of 1995, a 1.6 million AFY shortage of water supply existed in California. In 2020, the shortage is projected to be 2.4 million AFY (DWR 1998). DWR has also begun to update its assessment of the State's water supply and demand with its California Water Plan

Update 2003. This new plan will look more broadly than before at programs and conditions affecting the State's water resources. Those programs will include evaluating the status and interaction of CALFED, the Colorado River Water Use Plan, the CVPIA, the State Water Resources Control Board Bay-Delta water rights hearings, re-licensing of hydroelectric project, and global warming, among other programs and conditions (DWR, 2002a).

In addition, scientists are recognizing changing trends in atmospheric conditions that are already showing effects on California's water supplies. Over the past century, land and sea temperatures have risen by about 1°F. Since 1958, carbon dioxide levels have increased from about 315 parts per million (ppm) to about 370 ppm, from which there appears a correlation that as carbon dioxide increases, land and sea temperatures increases. The effects are already being realized in State water supply as measurements in the Sacramento River system show that water originating from mountain snowmelt has diminished by about 12 percent over the last century. A compounding effect is that more intense and earlier snowmelt is lowering natural flows in river systems during the April – July period, allowing less surface water to be diverted to beneficial use and storage for later use in the year (Knowles and Cayan 2002).

Finally, under the California Colorado River Water Use Plan, California is charged with bringing its use of Colorado River Water in line with its allocation. California's normal apportionment is 4.4 million AFY but at times has used up to 5.4 million AFY. A plan for implementing water conservation measures and groundwater storage is being implemented over a 15-year period from 2001 – 2016 in order to accomplish a progressive reduction in California's reliance on Colorado River water to within its normal apportionment (Colorado River Board, 2002a).

In summary, there are increasing demands on the State's fresh water supplies, and decreasing supplies of fresh water to meet those demands. Therefore, to the extent feasible, both the conservation of fresh water and the use of alternative sources of water can help extend the availability of fresh water to meet the State's demands.

Regional Water Demand

Regional water demand is increasing. The USBR's 1997 American River Water Resources Investigation (ARWRI) Planning Report addressed water-related needs of Sacramento County. The report projects a 24 percent increase in demand, or an increase of 187,000 AFY between 2000 to 2030. The ARWRI Report concluded that future Sacramento County water needs cannot be met with current supplies. This report concluded that continued development will cause a regional water supply shortage as early as 2010 unless proactive steps are taken to improve conservation and management of existing resources. Current regional water demands are met by 60 percent surface water and 40 percent groundwater.

Sacramento County Water Agency (SCWA) faces the most immediate demand/supply shortfall and has adopted a policy of pursuing alternative water supplies, most notably reclaimed water where feasible. Even though the cost of reclaimed water treated for unrestricted use currently exceeds the cost of potable supplies, USEPA, SCWA and most other water purveyors consider reclaimed water a necessary alternative.

In 1995, a group of diverse stakeholders created the Water Forum to try to provide for a reliable and safe water supply for the region's economic health and planned development to the year 2030 and to preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River. The result of the Water Forum process was the Water Forum Agreement, which includes a series of specific agreements identifying the actions various stakeholders will take (Water Forum 2001).

At the regional level, the Regional Water Master Plan focuses on the future development of a groundwater banking program centered around the areas of greatest groundwater draw down, or "depression." There is an estimated 1.5 million AF of volume associated with the current groundwater depressions, with the remaining, readily usable portion estimated at 400,000 to 600,000 AF. The proposed water bank would increase surface water diversions from current levels in “wet” years, when more surface water is available, and groundwater pumping would be reduced (relative to “dry” years) to promote groundwater recharge. In “dry” years, the use of groundwater would be increased (from current levels of use) in order to reduce use of American River surface water.

SMUD's agreement under the Water Forum increases SMUD's current American River diversions from 15,000 AFY to 30,000 AFY in average and wet years and decreases diversions to 15,000 AFY in dry years. This latter reduction will be accomplished by reducing demand by 5,000 AF and using groundwater to meet any additional needs. Agreements with other entities also reflect the need to increase groundwater pumping in dry years, and the agreement acknowledges that at those times, even the minimum diversions identified may not be met. The Water Forum Agreement stresses the need for conservation, stating that it is "essential to meeting the goals of the Water Forum" (p. 19).

Regional Groundwater Supply

Although the proposed project would not use groundwater, there is a close connection in the region between fresh water demand and surface and groundwater supplies. All water needs in the region are met by use of one of those two sources, so when the availability of one resource decreases, demands on the other are likely to increase. As discussed above, increased groundwater pumping was identified in the Water Forum process as a management strategy for a number of water suppliers during dry years. Thus, the proposed consumption of American River water removes a surface water resource from the region, and may result in a comparable increase in area groundwater demand.

As noted previously, extensive regional groundwater use has resulted in three persistent regional groundwater depressions, with groundwater levels decreasing at an average rate of about 0.5 foot per year. The depressions were 40 to 70 ft deep in 1990 and are projected to increase up to 220 ft by 2030 under various groundwater use scenarios (Sacramento County Water Agency 1997). Declines in groundwater level greater than 80 ft contribute to the deterioration of groundwater quality due to the up-rising of deeper, poorer quality groundwater. Increasing dependence on groundwater in the region will exacerbate this problem.

Regional Surface Water Supply

The Sacramento area population is projected to increase by one million over the next 30 years. Participants to the Water Forum Agreement recognized that unless adequate water supplies are made available, many residents, businesses and farmers will continue to suffer water shortages during California's periodic droughts. To meet the Water Forum's objective of providing a reliable and safe water supply for the region's economic health and planned development through the year 2030, increased surface water diversions will be needed even with active conservation programs and sustainable use of groundwater resources.

In the Sacramento region, the water rights and firm contractual entitlements for American River water are three times greater than those for Sacramento River water (approximately 800,000 AF to 250,000 AF). Because of the greater dependence on American River water to the region, the supply of American River water is discussed.

Total annual flows of the American River range from less than 400,000 AF to greater than 6,300,000 AF, with an average of 1,600,000 AF. The Water Forum Agreement identifies three principal water year types: wet/average years, drier years, and driest years, and are defined as the following:

- Wet/Average Years are years when the projected unimpaired inflow is greater than 950,000 AF.
- Drier Years are years when the projected unimpaired inflow is less than 950,000 AF.
- Driest Years are years when the projected unimpaired inflow is less than 400,000 AF.

The water year classification is based on projected March through November unimpaired inflow into Folsom Reservoir. Unimpaired inflow is the natural water production of a river basin, unaltered by upstream diversions, storage, or export or import of water to or from other watersheds. Under the Water Forum Agreement, the water year classifications are used to define surface water diversions from the Lower American River.

Sufficiency of Water Supply to Meet Demand

It is apparent that the Sacramento region is likely to experience shortfalls in surface water availability in coming years. By 2030, the Water Forum expects diversions from the American River to increase from the current level of 216,500 AFY to about 481,000 AFY during Wet/Average Years (Water Forum 2001). In the Drier and Driest Years, certain water purveyors will not exercise their full water rights or contract entitlements for surface water diversion from the American River. The likely response to those shortfalls may include increased use of reclaimed water, water conservation programs, and increased groundwater pumping. Depending upon demand, the latter response could cause significant impacts, such as decreased groundwater levels and decreased water quality.

There have been efforts to address the regional water shortfall, most notably through the Water Forum process. Specifically, the Water Forum process addresses each

water supplier's situation, providing a series of actions taken to manage water supply during wet, average, and dry conditions. Under the Water Forum Agreement, SMUD is allowed to divert 30,000 AFY from the FSC and use the 15,000 AFY from the City of Sacramento during most years. During the driest years, the FSC diversion drops to 15,000 AFY. This amount is almost seven times the maximum amount of water required for the operation of Phase 1 of the CPP on an annual basis. As a result, although regional water shortages are predicted, staff finds that the Water Forum process has addressed SMUD's potential water use in a reasonable way, and concludes that the incremental effect of CPP water use is not cumulatively considerable.

Staff also notes that SMUD has stipulated to the use of an alternative cooling water source for Phase 2 of the project, with the result that the Phase 1 fresh water use represents the total amount for the entire project (see **Water and Soil Resources Exhibit 1**).

ENVIRONMENTAL JUSTICE

Staff has reviewed Census 2000 information that shows the minority population is less than 50 percent within a six-mile radius of the proposed Cosumnes Power Plant (please refer to **Socioeconomics Figure 1** in this Staff Assessment). However, as indicated in **Socioeconomics Figure 1**, there are multiple census blocks with greater than 50 percent minority persons within the six-mile radius; staff considers these to be pockets or clusters. Staff also reviewed Census 2000 information that shows the low-income population is less than 50 percent within the same radius. Staff has not identified any direct or cumulative unmitigable significant impacts to soil or water resources within six miles of the plant site. Therefore, there are no water and soil environmental justice issues related to this project.

COMPLIANCE WITH LORS

FEDERAL

Clean Water Act

The CPP must comply with Sections 401, 402, and 404 of the CWA (see Conditions of Certifications **Water & Soil 4**). Staff believes the CPP may encroach into waters of the U.S. in Clay Creek and the East Tributary. To date, staff notes that the 404 Permit process has not been concluded, and therefore staff recommends adoption of Condition of Certification **Water & Soil 4** to assure that a 404 Permit is acquired prior to commencement of construction.

STATE

Streambed Alteration Agreement

Staff recommends Condition of Certification **Water & Soil 4**, which requires compliance with Section 1601 of the California Fish and Game Code (an agreement between the

Department of Fish and Game and SMUD) prior to construction (see **Biological Resources** section of this FSA).

California Constitution, Article X, Section 2

This section requires "that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare."

Staff has considered the question of whether the use of fresh water for power plant cooling constitutes waste or an unreasonable use or fails to appropriately conserve the State's waters when there are feasible alternatives. Based on a number of Water Code provisions and on SWRCB policy, staff concludes that it does. Although staff understands that this is a legal issue, which is usually not addressed in technical analyses, provided is a summary of staff's understanding of the legal issue which explains why this testimony addresses whether there is a feasible alternative to the use of fresh water for cooling in this case. As such, the following three paragraphs are not being offered as testimony, but as a statement of counsel explaining why staff evaluates the feasibility of alternatives to the use of fresh water.

Specifically, the Legislature has found that the use of potable domestic water for non-potable uses, including industrial uses, is a waste or an unreasonable use of the water within the meaning of the Constitutional provision, provided that the State Board has found that there is recycled (reclaimed) water available that is of adequate quality, available at reasonable cost, does not cause health impacts or adversely affect water rights (Water Code section 13550). Similarly, Water Code section 13552.6(a) states that the use of potable domestic water for cooling towers is a waste or unreasonable use within the meaning of the Constitutional provision if the State Board determines that recycled (reclaimed) water is available that meets the conditions articulated above.

Those statutes evince a strong legislative policy against the use of fresh water for non - potable uses where feasible alternatives are available. And, although the State Board is not being asked to determine whether the Water Code standards are met in this case, staff believes that the Energy Commission, whose license is in lieu of all other State permits, can and should make the same determination in its siting cases. For further guidance, staff refers to Water Code section 13146, which directs other State agencies to "comply with State policy for water quality control unless otherwise directed or authorized by statute. . ." Thus, where there is an alternative to the use of fresh water for power plant cooling that is economically, environmentally, legally, and technologically feasible, the Commission should disallow the use of fresh water for that purpose.

Further support for staff's conclusion that the unnecessary use of fresh water for power plant cooling is a waste or unreasonable use and does not serve to conserve the State's waters is found in State Board policy. Resolution 75-58 establishes priority for sources of cooling water for power plants, with high-quality inland water being the lowest recourse. The Resolution also states that "[w]here the Board has jurisdiction, use of fresh inland waters for power plant cooling will be approved by the Board *only* when it is

demonstrated that the use of other water supply sources or other methods of cooling would be environmentally undesirable or economically unsound" (emphasis added). Significantly, in 2002, the Chair of the State Board sent a letter to the Commission's Siting Committee, stating that "the basic principals of the policy are sound. The policy requires that the lowest quality cooling water reasonably available from both a technical and economic standpoint should be utilized as the source water for any evaporative cooling process . . ." (Baggett 2002).

Staff evaluated several alternatives to the use of fresh water at Phase 1 of the CPP, and found that use of reclaimed water is generally technically and economically feasible as discussed in the **Alternative Water Supply** section of this analysis. However, SMUD has unique timing problems related to its status as a municipal utility that renders those options, in this case, infeasible. Specifically, SMUD has a series of power purchase contracts for providing baseload power to its customers. Those contracts expire in 2005, which means SMUD must be able to provide consistent and reliable power to its customers by that time. It is not clear that SMUD would be able to finish planning, permitting, and constructing a water line and treatment facilities prior to their preferred plant operation date of Spring 2005. The risk of disruption in service that SMUD customers could face is, in staff's opinion, unacceptable. However, given SMUD's agreement to use reclaimed water for Phase 2 (see **Water and Soil Resources Exhibit 1**), staff encourages SMUD to consider reclaimed water for Phase 1 when reclaimed water becomes available for Phase 2. Having two sources of water available should increase the reliability and flexibility of plant operation.

All other LORS would be complied with if the following Conditions of Certification are required and implemented.

MITIGATION

APPLICANT PROPOSED MITIGATION

SMUD provided a draft SWPPP that identifies temporary and permanent erosion control and stormwater BMPs. The draft SWPPP identified a number of potential BMPs for the construction and operation of the CPP (SMUD 2002s). The practices identified are:

- temporary and permanent water diversion strategies;
- temporary and permanent vegetation strategies;
- use of soil stabilizers (i.e., water) as appropriate to minimize dust;
- installation of a sediment/retention basin to minimize off-site discharge of sediments;
- storm drain inlet protection to prevent sediment-laden runoff from entering inlets or catch basins;
- the use of silt fences, straw bale barriers, and fiber rolls to intercept sediment-laden runoff from disturbed soil;

- secondary containment for hazardous material delivery and storage areas to prevent spills or leakage of liquid materials from contaminating soil or soaking into the ground;
- designated storage areas for construction wastes, hazardous materials, paints, and related products along with covered dumpsters and containers for waste and recyclables;
- training of employees on stormwater quality management;
- implementation of a spill prevention and control plan;
- timely removal of construction wastes;
- storage of all liquid wastes in covered containers;
- emergency spill containment kits and materials in areas of potential hazardous materials release; and
- routine maintenance of the oil/water separator system.

These measures are helpful, but are not sufficient by themselves for the CPP project. Staff recommends additional measures in the next section.

ENERGY COMMISSION STAFF PROPOSED MITIGATION

Staff recommends that SMUD implement mitigation in the following areas:

Stormwater

The CPP must comply with all NPDES requirements that regulate stormwater (see Conditions of Certification **Water & Soil 1 and 3**).

Soil Erosion Control, Stormwater Management, and Revegetation

Erosion and sedimentation are concerns at the CPP site. Additional measures beyond those proposed in the AFC by SMUD are needed. The CPP must implement a CPM approved site specific Erosion Control and Revegetation Plan that is consistent with Sacramento County standards. The plan shall include:

1. design of drainage channels for diverted flow from the East Tributary and Western Swale;
2. erosion-control measures or revegetation plans for the CPP site at the location where the site encroaches into Clay Creek;
3. erosion control measures for the discharge points of the detention basin;
4. plans for construction and erosion control in the diverted Clay Creek south braid;
5. best management practices for wind and water erosion control during construction and operation;
6. plans to direct all contact stormwater to the ZLD and all other stormwater runoff to the detention/retention basin; and
7. improvements for detention pond treatment efficiency.

SMUD shall implement Stormwater and Industrial SWPPPs. Erosion control and stormwater management drawings need to accompany the narrative portion of the SWPPPs (see Conditions of Certification **Water & Soil 1, 2, 3, 5, 6, 10, and 11**). Both

the drawings and the narrative need to be detailed, specific, consistent, and include the following elements for the proposed CPP project:

- drawings/maps that show the topographic features of the proposed project including areas involving all proposed pipeline construction, the 20-acre laydown area, and stockpile location(s). The mapping scale should be 1"= 100' or less (1"=50' recommended). The drawings should depict the surrounding area (south and east of site) including the topography and existing features. The drawings should also show existing structures, drainage pipes, and diversion swale(s).
- a discussion of any soil use limitations associated with construction and revegetation, and any resolutions needed to assist the contractor in overcoming any specific soil characteristics limitation. Particular attention should be paid to restoration of the laydown area and establishing permanent erosion protection and/or vegetative cover on earthen embankments.
- a map/drawing that show the proposed contours tying in with existing ones. The mapping scale should be 1"= 100' or less (1"=50' recommended). All proposed utilities including stormwater facilities should be shown on the plan drawings. All erosion and sedimentation control facilities should be shown on the maps. The drawings should contain a complete mapping symbols legend that identifies all existing and proposed features including the soil boundary(s) and a limit of construction. The limit of construction boundary should include the project facility, pipeline areas, stockpile areas and laydown areas. The limit of construction ensures all work is confined to the proposed CPP site in order to protect all surrounding areas not involved in construction or operation of the proposed project.
- a detailed and specific construction sequence that addresses the entire sequence of events from initial mobilization until final stabilization (e.g., vegetation/asphalt) is achieved.
- a description of how silt fences and hay bales would be installed and maintained on level grade and parallel to the existing contour. If the slope length to the silt fence and hay bales exceeds 250 ft, other erosion and sediment control facilities should be used. Silt fence and hay bales should be used to trap sediment and not as runoff conveyance or control facilities.
- a detailed depiction of all site-specific BMPs proposed in the erosion and sediment control plan and the stormwater management plan and discussed in the narrative. The details of each BMP facility need to be provided on the drawings including the proposed diversion and conveyance structures from the point where the East Tributary crosses Clay East Road to Clay Creek.
- drawings that include all proposed vegetative areas and soil amendment specifications with regard to irrigation, nutrients, drainage, low pH, and salinity requirements of the site soil types.
- a description of the dewatering protocol to be used in the event of groundwater contact during excavation activities.
- a description of stormwater inlet protection to be implemented during construction and operation.

- a set of erosion control drawings and narrative, designed and sealed by a professional engineer/erosion control specialist. Particular attention should be paid to earthen embankments and maintenance/replacement of BMPs during the entire construction and operating period. Overland flow across earthen embankments should be minimized.

Site Flooding

The proposed CPP site lies with one corner of the site in the 100-year flood plain. The CPP site shall be graded to be no lower than the highest adjacent encroached 100-year flood level of Clay Creek. Lowest floors and foundations of buildings, storage areas and any equipment shall be at least one foot above the adjacent 100-year flood level of Clay Creek.

All drainage currently entering the CPP site from the south, up to the 100-year peak discharge, shall be diverted around the site. This includes the East Tributary, the small Western Swale, and the laydown area. Adequate channels shall be designed and constructed to convey diverted flow to Clay Creek outside the CPP site (see Conditions of Certification **Water & Soil 5, 6, and 10**).

Process and Sanitary Wastewater

The project will operate with a ZLD system that will eliminate all process wastewater discharge. Since the applicant has proposed no back-up for the ZLD system, staff recommends monitoring of the ZLD system and on-site storage facilities (see Condition of Certification **Water & Soil 7**). Staff also recommends that the facility shut-down in the event of a disruption to the operation of the ZLD system. Compliance with this condition should ensure proper handling, storage, and disposal of wastewater generated at the CPP.

The on-site septic system and drainfield must be designed according to applicable State and county laws in order to prevent any significant impacts to water quality. Condition of Certification **Water & Soil 9** requires review of the final design plans by the CPM, CVRWQCB, and Sacramento County for the protection of water quality. The plans must be approved by the Energy Commission before the start of septic system construction activities.

FACILITY CLOSURE

The CPP is expected to operate for a minimum of 30 years depending on its economical viability. Early decommissioning is also possible. Decommissioning may involve mothballing or removal of all equipment and appurtenant facilities.

A facility closure plan would be submitted to the Energy Commission for approval prior to decommissioning. Compliance with all applicable LORS and any local and/or regional plans would be required. The plan would address all concerns regarding water and soil resources (SMUD 2001a).

AGENCY COMMENTS

CVRWQCB-1 The oil/water separator may not sufficiently treat all the waste produced by the CPP drains, such as total dissolved solids or dissolved metals. Subsequently the subsurface discharge of the partially treated industrial waste to a leach field may degrade the underlying groundwater.

CVRWQCB-2& -3 The reported elevated concentrations of dissolved solids associated with the CPP drains may cause the waste to be classified as designated waste. The storage and handling of a designated waste must comply with Title 27 California Code of Regulations, in which case the discharge to a leachfield would be prohibited.

CVRWQCB – 4 The ZLD system will eliminate the need for an NPDES permit, although the secondary wastewater treatment system must be regulated by the Regional Board through the adoption of Waste Discharge Requirements. Consistent with California Water Code Section 13260, SMUD must submit a complete Report of Waste Discharge (RWD) at least 120 days prior to discharging wastewater. Information contained within the RWD will be used for developing WDRs for the secondary treatment system.

CVRWQCB – 5 Before staff can draft WDRs for the Regional Board's consideration, the applicant must clearly demonstrate the proposed secondary treatment system will not degrade the underlying groundwater. The applicant's proposal as described indicates that the CPP drain discharge to the leachfield may cause groundwater degradation, which is not acceptable.

CVRWQCB – 6 The applicant has proposed an alternative method of disposal for the CPP drain waste of capturing the waste and then transporting it offsite for disposal at an approved wastewater treatment facility. This disposal method is protective of the underlying groundwater and therefore, it is recommended that the applicant pursue this option further. If this option is utilized, then the Regional Board would still regulate the domestic wastewater package plant, and a RWD would still be required. Staff anticipates that it would be a much simpler process to prepare tentative WDRs for the disposal of only domestic wastewater.

Response to CVRWQCB 1-6: The applicant has clarified that the effluent from miscellaneous waste streams, including drains and the oil/water separator will be discharged to the cooling tower/ZLD system and that no industrial water will go to the package treatment plant/leach field (SMUD 2002am, pg. 29).

Based on SMUD's Water Balance Diagram Figure 8.14-3aR, the only wastewater streams directed to the packaged sanitary waste system will be those which originate from the potable water systems. Therefore, no partially treated industrial waste would enter the leachfield. Additionally, staff has proposed Condition of Certification **Water & Soil 9** which prohibits any wastewater stream with potential toxicity from entering the

septic system and which requires the applicant to obtain waste discharge requirements from the CVRQWCB for the proposed leachfield.

CONCLUSIONS AND RECOMMENDATIONS

Staff evaluated whether construction or operation of the project would result in accelerated wind or water erosion and sedimentation, and whether it would exacerbate potential flood conditions. Staff concludes that with implementation of the conditions of certification, any such project impact would be adequately mitigated.

Staff also evaluated the impact of the project's water supply. Staff did not find a direct impact, due to the fact that the project would not result in a demonstrable reduction in regional water supplies. Although regional water shortages are predicted, staff finds that the Water Forum process has addressed SMUD's potential water use in a reasonable way and concludes that the incremental effect of CPP water use is not cumulatively considerable.

Staff also found that with implementation of the proposed conditions of certification, the project would comply with all applicable LORS. Finally, staff evaluated alternatives to using of fresh water for Phase 1 and Phase 2 of the CPP and found that use of reclaimed water is technically and economically feasible; subsequently, SMUD has agreed to use reclaimed water for Phase 2. However, staff believes the timing and availability of tertiary-treated water for the start of operation of Phase 1 in 2005 is uncertain. Additionally, SMUD's status as a municipal utility and their mandate to provide reliable power to their customers makes the use of reclaimed water infeasible for Phase 1. Therefore, staff also concludes that the project will comply with State policy regarding the conservation of fresh water.

CONDITIONS OF CERTIFICATION

WATER & SOIL 1: The project owner shall comply with all of the requirements of the General NPDES Permit for Discharges of Storm Water Associated with Construction Activity. The project owner shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for the construction of the entire CPP project as required by the General NPDES permit. Prior to beginning any site mobilization associated with any project element the project owner shall submit to the CPM a copy of the Notice of Intent for Construction accepted by the CVRWQCB and obtain CPM approval of the construction activity SWPPP. Approval of the SWPPP by the CPM must be received prior to site mobilization for any project element.

Verification: No later than 60 days prior to the start of site mobilization for any project element, the project owner shall submit a copy of the SWPPP required under the General NPDES Permit for Discharges of Storm Water Associated with Construction Activity to Sacramento County for review and comment and to the CPM for review and approval. The SWPPP will include copies of the Notice of Intent for Construction accepted by the CVRWQCB. The SWPPP shall include as a minimum:

- design of drainage channels for diverted flow from the East Tributary and Western Swale;

- erosion-control measures or revegetation plans for the CPP site at the location where it encroaches into Clay Creek;
- erosion control calculations and designs for the inside surface, inlet points, and all discharge points of the detention basin;
- construction and erosion control in the diverted Clay Creek south braid;
- best management practices for wind and water erosion control during construction;
- grading plans for the proposed site and laydown area showing proposed grade and contours in comparison to existing grade and contours; and
- any other applicable measure listed under mitigation measures in the FSA section.

WATER & SOIL 2: Prior to beginning any site mobilization activities for any project element, the project owner shall obtain CPM approval for a site-specific Erosion and Sedimentation Control Plan that addresses all project elements including erosion protection for the proposed Clay Creek conveyance features and tributary diversion channels. The plan shall address revegetation and be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1**.

Verification: No later than 60 days prior to the start of any site mobilization for any project element, the project owner shall submit the Drainage, Erosion and Sedimentation Control Plan to the CPM for review and approval. No later than 60 days prior to start of any site mobilization, the project owner shall submit a copy of the plan to Sacramento County for review and comment. The plan must be approved by the CPM prior to start of any site mobilization activities.

WATER & SOIL 3: The project owner shall comply with all of the requirements of the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity. The project owner shall develop and implement a SWPPP for the operation of the CPP as required by the NPDES permit. The project owner shall submit to the CPM a copy of the Notice of Intent for Operation accepted by the CVRWQCB and obtain approval of the General Industrial Activities SWPPP from the Energy Commission CPM prior to commercial operation of the CPP.

Verification: No later than 60 days prior to the start of commercial operation, the project owner shall submit to the CPM a copy of the SWPPP required under the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity to Sacramento County for review and comment, and to the CPM for review and approval. The operational SWPPP shall include copies of the Notice of Intent for Operation accepted by the CVRWQCB.

WATER & SOIL 4: The project owner shall obtain and provide a copy of the Streambed Alteration Agreement and CWA 401, 402, and 404 permits as appropriate, or proof that they are not needed, prior to site mobilization activities. Site modifications required by any of these permits may require evaluation by the CPM prior to issuance of the final construction permit.

Verification: No later than 30 days prior to site mobilization for any project element, the project owner shall provide copies of the final, approved Streambed Alteration

Agreement and CWA 401, 402, and 404 permits; or written verification that one or more are not needed, to the CPM.

WATER & SOIL 5: The CPP site shall be graded to be no lower than the highest adjacent 100-year flood level of Clay Creek expected to occur after encroachment of the CPP site into the Clay Creek floodplain. Lowest floors and foundations of buildings, storage areas and any equipment shall be at least one foot above the adjacent 100-year flood level of Clay Creek. A Plan demonstrating compliance with these requirements must be approved by the CPM prior to the initiation of site mobilization activities.

Verification: No later than 60 days prior to site mobilization for any project element the project owner shall submit to the CPM a grading and finished floor plan for the CPP site. This plan must clearly show that the site will be above the 100-year flood plain, and that buildings and equipment subject to damage or contamination by flooding will be at least one foot above the flood level.

WATER & SOIL 6: All stormwater flow to the watercourse (referred to in this report as the East Tributary) currently entering the CPP site at the location of a culvert across Clay East Road approximately 350 ft west of the northeast property corner, plus that portion of the laydown area graded to drain to this watercourse, shall be diverted to the east around the site and into Clay Creek using new culverts and a drainage channel designed for the 100-year peak discharge.

Verification: No later than 60 days prior to site mobilization for any project element the project owner shall submit to the CPM hydraulic calculations, plans, and structural designs for all proposed diversion channels, culverts and concrete headwalls. The plan and calculations must be approved by the CPM prior to the initiation of site mobilization activities.

WATER & SOIL 7: Surface or subsurface disposal of process wastewater or contaminated stormwater from the CPP is prohibited. The project owner shall treat all appropriate wastewater streams with a ZLD system that results in a residual cake solid waste. Processed contact stormwater (from the oil-water separator) shall be recycled for use as cooling water and the residual solid waste will be disposed of in an appropriate off-site landfill.

Verification: At least 60 days prior to the start of project operation, the project owner shall submit to the CPM the final design of the zero liquid discharge system and a back-up wastewater disposal method to be implemented during periods of ZLD system shutdown or maintenance. At a minimum this submittal shall include schematic plans, narrative of operation, maintenance schedules, on-site storage facilities, containment measures, and identify influent water quality.

This information shall also include the results of the Waste Extraction Test of the residual cake solid waste from the zero liquid discharge system. In the annual compliance report, the project owner will submit a status report on operation of the zero liquid discharge system, including disruptions, maintenance, volumes of interim wastewater streams stored on site, volumes of residual salt cake generated and the landfills used for disposal. In addition, the project owner shall submit to the CPM copies of the annual monitoring report for stormwater as normally submitted to the CVRWQCB under the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity.

WATER & SOIL 8: Total water use by the project owner for the operation of the CPP project and all landscape irrigation of the CPP site shall not exceed an annual average of 2,663 AFY over any three successive calendar years, nor exceed a peak flow of 2,500 gpm.

Verification: The owner shall maintain daily records of water use from each source (FSC, Rancho Seco Reservoir and/or reclaimed if used) and as part of its annual compliance report shall submit a water use summary to the CPM on an annual basis for the life of the project. The owner shall track its water use (from any source) on a daily basis and shall notify the CPM immediately upon exceeding, or upon forecast to exceed, the peak flow of 2,500 gpm. The annual average 2,663 AFY shall be calculated based upon any consecutive three-year period starting with the first full calendar year of operation and shall not exceed the average annual consumption for any three consecutive years for the life of the project.

WATER & SOIL 9: A domestic wastewater system shall be designed for site-specific soils and percolation conditions and comply with Sacramento County laws. The on-site system should be designed and monitored to assure that effluent nitrates and viruses are reduced to the lowest practical level with no detectable effect on groundwater or surface water. Any wastewater stream with potential toxicity shall not enter this system. The project owner must obtain and comply with Waste Discharge Requirements (WDRs) from the CVRWQCB or provide written verification from the CVRWQCB that WDRs are not needed.

Verification: No later than 90 days prior to power plant operation, the project owner shall submit to the CPM a plan for the design and quarterly monitoring of the site domestic wastewater system. The system shall include a process to reduce nutrient and virus levels and shall include shallow groundwater monitoring wells (such as one up-gradient and three down-gradient). This plan shall be sent to Sacramento County for review and comment, and must be approved by the CPM prior to power plant operation. The project owner must obtain and comply with Waste Discharge Requirements (WDRs) from the CVRWQCB or provide written verification from the CVRWQCB that WDRs are not needed.

WATER & SOIL 10: The proposed detention basin shall be designed to withstand a 100-year flood generated on site with at least three feet of freeboard from the water surface crest in the spillway to the top of embankment. The project owner shall provide adequate embankment safety and erosion protection for Clay Creek in the location of the detention basin discharges. The proposed detention basin shall also be designed to collect, hold (for a minimum 24-hours) and treat the Water Quality Volume (WQV), i.e. the “first-flush” flows according to the procedures described in the Sacramento County Guidance Manual for On-Site Stormwater Quality Control Measures (Sacramento Stormwater Management Program, 2000). At the minimum, the following shall be included or considered as applicable:

- Any pipes and structures within the embankment shall have seepage rings and other measures needed to minimize the risk of erosion relating to embankment piping.
- Pond inlets shall be configured to uniformly distribute flow across the pond width and the pond outlet should be located as far from the inlet as practical to minimize

short-circuiting. A meandering low-flow channel is suggested for the bottom of the basin.

- A fixed surface baffle or a floating boom, plus oil-adsorbent pads or a continuous floating oil skimmer, shall be considered for the outlet pipe and spillway. Accumulated debris and oil should be able to be readily removed.
- Outlet screen performance shall not be impaired by a reasonable accumulation of debris. Screen area should be a minimum of 3 times the outlet pipe cross-sectional area.
- The detention basin outlet device shall be configured to limit the pond release rate to below pre-development rates.
- A separate drain valve shall be provided to enable seasonal pond drain-down and drying to eliminate the risk of vector problems. All pond outlets and drain valves shall be located in a position suitable for ready access for operations and maintenance. Buried valves are not permitted inside the embankment.
- Depth markers shall be provided to monitor sediment deposition. A means of access shall be provided to facilitate the equipment needed for sediment removal.
- The perimeter shall be suitably fenced to restrict public and animal access.
- The dike berm shall have a surface suitable to enable traffic to continuously pass around the entire perimeter during all weather conditions.
- A maintenance plan shall be developed that complements the structure's design.

Verification: At least 60 days prior to site mobilization for any project element, the project owner shall provide detailed detention basin embankment and outlet designs, hydrologic and hydraulic analysis, and maintenance and operation designs, hydrologic and hydraulic analysis, and protocols to the CVRWQCB and County of Sacramento Water Resources Division for review and comment and to the CPM for approval. Basic detention basin and spillway design shall follow the concept presented in Data Responses Informal Set 13 dated January 2, 2003, as updated by Revised Informal Set 13, dated January 24, 2003. Those designs, analysis, and protocols must be approved by the CPM prior to site mobilization.

WATER & SOIL 11: The proposed gas pipeline at stream crossings shall be located below the anticipated depth of scour from a 100-year flood. This depth of burial shall be extended a sufficient distance away from the streambed to avoid anticipated lateral erosion. Trenched water crossings shall be constructed during the dry season using "in the dry" construction techniques that avoid trenching within open or flowing water. The stream bed at trenched crossings shall be restored to the natural contours and revegetated.

Verification: At least 60 days prior to site mobilization for the proposed pipeline, the project owner shall submit to the CPM, an analysis (plan) prepared by a registered civil engineer, that demonstrates the proposed pipeline would be below the expected 100-year depth of scour at all stream crossings, and that the pipeline will remain at that depth for a sufficient distance away from the stream channel to avoid any lateral erosion that can be reasonably expected to occur during the life of the project. The CPM must approve this analysis (plan) prior to site mobilization activities starting on the pipeline.

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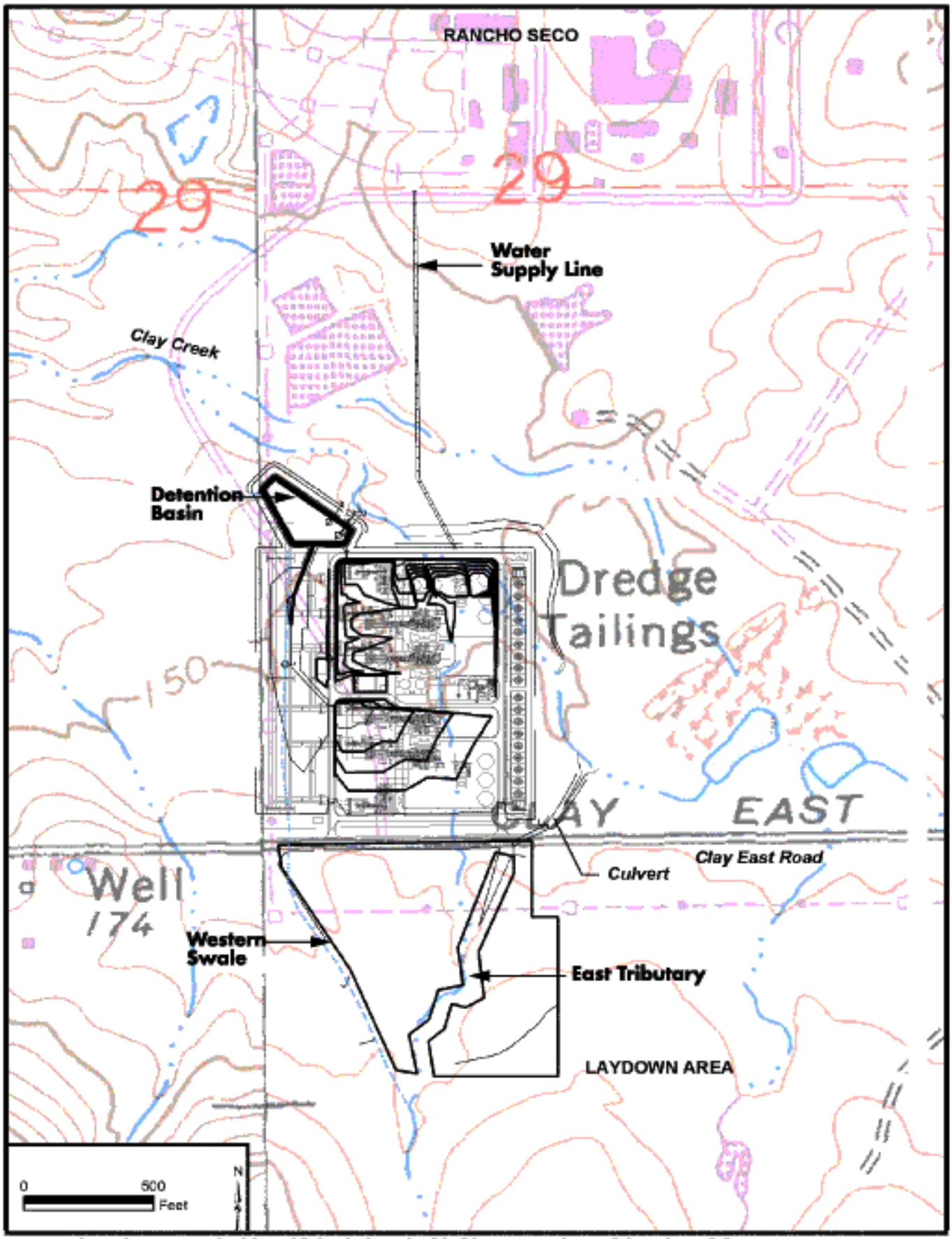
Inserts

Insert: Water & Soil Resources Figure 1 – Local Surface Waters

Insert: Stipulation for the Use of Reclaimed Water for Phase 2

WATER & SOIL RESOURCES - FIGURE 1
Cosumnes Power Plant - Project Layout and Surface Waters



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, FEBRUARY 2003
SOURCE: SMUD

WATER AND SOIL RESOURCES EXHIBIT 1 01-AFC-19

CALIF ENERGY COMMISSION

JOINT STIPULATION ON WATER SOURCE FOR COSUMNES POWER PLANT PHASES I AND II

FEB 18 2003

RECEIVED IN DOCKETS

Sacramento Municipal Utility District (SMUD) and California Energy Commission staff (Staff) hereby agree to the following terms and conditions regarding the water source for Phases I and II of the Cosumnes Power Plant (CPP). SMUD and staff agree that the terms and conditions below will not cause significant adverse environmental impacts and will comply with applicable laws, ordinances, regulations and standards.

1. Considering SMUD's existing water contracts for Folsom South Canal (FSC) water and the current lack of available reclaimed water, the source, use and treatment of water for CPP Phase I shall be as presented in Application for Certification Supplement C. The source of water is the FSC.
2. If Title 22 California Code of Regulations (CCR) water is available within 15 miles of CPP, it will be used in Phase II to the extent available provided the Energy Commission determines it is economically feasible and reasonably priced in relation to the costs of other sources of Title 22 water for power plants licensed by the Energy Commission. SMUD will assume the cost of licenses, permits, rights-of-way, materials, labor and installation of up to 15 miles of water pipeline. The application for Phase II will contain a complete description of Phase II including information consistent with this agreement and the Energy Commission data adequacy regulations.
3. To ensure electrical generating reliability for SMUD customers, SMUD will have the capability of using FSC water for backup water for Phase II, should such an emergency take place that renders Title 22 CCR water systems and related equipment inoperable.
4. If a suitable opportunity appears after the date of this agreement, Staff and SMUD shall retain the ability to consider a future agreement allowing a one-to-one offset of Title 22 CCR water to be exchanged for Phase II use of FSC water.
5. SMUD will consider the possible future use of reclaimed water in Phase 1, in the event reclaimed water in excess of the amount needed for Phase II is available, by addressing the feasibility of this conversion in the Phase II application to the Energy Commission.

As witnessed below:

Terrence O'Brien, Energy Commission Deputy Director — 2/7/03 Date

Colin Taylor, SMUD Director of Power Generation — 2/7/03 Date

PROOF OF SERVICE (REVISED 10-22-02) FILED WITH

ORIGINAL MAILED FROM SACRAMENTO ON 2-18-03